REMARKS

Claims 1 and 3-20 are pending in the present application. Claims 1, 4, 5, 8, 9, 12, 13, 15, 16 and 18-20 have been rejected under 35 U.S.C.§103(a) over Long et al. (U.S. Patent 6,176,453) in view of Okamoto et al. (EP 0919647 A1). Claims 3, 6, 7, 14 and 17 have been rejected under 35 U.S.C.§103 over Long in view of Okamoto further in view of Bable et al. (U.S. Patent 5,296,285). Claim 10 is rejected under 35 U.S.C.§103 over Long and Okamoto further in view of Bjorndahl et al. (U.S. Patent 6,005,771). Claim 11 has been rejected under 35 U.S.C.§103 over Long and Okamoto further in view of Dalby (U.S. Patent 4,669,685). Reconsideration of the present application is respectfully requested.

All of the rejections of the claims of the present application are based on the Office Action dated August 4, 2004. On October 20, 2004, applicants filed a Response to that Office Action arguing that the Okamoto reference, the only reference applied against the claims of the present application for a phase change layer, only taught one skilled in the art to create a phase change layer that is several hundred microns thick. In the Advisory Action dated October 28, 2004, the Examiner conceded that:

> Applicants have a point, but their argument is flawed in one critical way. Applicant's argument presupposes the fact that Okamoto tested the manganese perovskite oxide film of their invention, and it determined that films that were thinner/thicker then "several hundred microns" were not suitable. However, there is no teaching in Okamoto that films having a thickness other than "several hundred microns" are "bad" or "unsuitable" for use on spacecraft.

Applicants filed the present RCE and submitted an Affidavit from Mr. Okamoto in response to the Examiner's observations. Specifically, Mr. Okamoto states that it would not have been obvious to one skilled in the art to create a phase change layer of 1-30 microns thick from the reading of the EP application, because at the time, it was not known how to form a layer that had a thickness of less than 200 microns.

The Examiner has stated that he has considered the Affidavit of Mr. Okamoto but respectfully disagrees with Mr. Okamoto's conclusions.

In the first full paragraph on page 4, the Examiner notes that "applicants claims are not commensurate in scope with the argument presented. The only material that applicants have allegedly shown could not be formed at a thickness of 1-30 microns is a perovskite manganese film, which is not required in all the claims." Applicants respectfully point out that applicants have not made any arguments that are "not commensurate in scope." Mr. Okamoto's Affidavit discussed the perovskite (manganese) film, because that was the subject matter of the reference cited by the Examiner against the claims of the present application. The Examiner has not applied reference as disclosing the phase change layer besides EP '647, which discloses a perovskite (manganese) film.

In the second full paragraph on page 4 of the Final Office Action, the Examiner addresses Mr. Okamoto's statement that the inventors of EP '647 were not able to achieve thinner layers of the phase-change layer. The Examiner "notes that many prior art methods of depositing perovskite (manganese) oxides are capable of achieving these thickness ranges (see cited, pertinent prior art below)." Applicants respectfully point out that the Examiner has not applied any of these references against the claims of the present application. The only reference which any of the Office Actions have applied against the claims of the present application is the Okamoto reference. Applicants respectfully submit that the Declaration of Mr. Okamoto overcomes the rejection of the claims of the present application based on his reference EP '647. Applicants have not had the opportunity to address any further rejection combining the Long reference, the Okamoto reference and any third references with respect to the formation of a 1-30 micron phase change substance layer.

Should one of such new references be cited against the claims of the present application, applicants respectfully request withdrawal of the finality of the present rejection.

In addition, in the second full paragraph on page 4, the Examiner notes an "extremely strong desire to reduce weight for space applications, and such desire would necessarily lead to the desire to reduce thickness values for various layers." Id. However, in order to present a prima facie case of obviousness, inter alia, the Examiner is required to show both a teaching or suggestion to modify the reference and that there must be a reasonable expectation of success. This motivation and expectation of success must be in the references. "The teaching or

suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure." MPEP § 2143 (emphasis added). The Examiner has failed to show where the EP '647 reference teaches: (1) a motivation to make a thinner phase change layer; and (2) how a thinner phase change layer could reasonably succeed in removing the heat from the object without an additional base layer. As discussed in the background section of the present application with respect to EP '647, "because it is necessary to achieve a high radiation efficiency with the phase-change substance alone at a high-temperature phase, it was necessary to have a thickness of several hundred microns." Specification, p. 4, ll. 10-13. Thus, there would be no motivation or expectation of success by reducing the thickness of the phase-change layer, as the Examiner suggests.

The inventors discovered that the combination of a base layer and a thin phase change layer overcame the deficiencies of the prior art thick layer. As taught in the detailed description of the present invention, "[a]lthough it is not possible for the [thinner] phase-change substance 1 to radiate sufficient heat because of its thinness, the heat radiated from the base material 2 forming the underlayer thereof, which has a high heat radiation ratio, passes through the phase-change substance 1, it is possible to achieve a large amount of heat radiated from both of these elements combined." Specification, p. 13, ll. 3-9. Superlative performance of the invention requires that the "phase-change substance comprises a thickness in the range from about one to about thirty microns," (Claim 1, ll. 12-13) in combination with a base material beneath the phase-change substance that "radiates a larger amount of heat at a high temperature . . . having a surface adapted to thermally contact a surface of said object." Claim 1, ll. 3-5. "For this reason, there is an increase in the amount of heat radiated into the external environment, thereby enabling a limitation of the temperature rise in the object 3." Specification, p. 13, ll. 10-12. The Examiner cites no authority for these teachings disclosed and claimed by the applicants, and thus has not made a prima facie case of obviousness.

Applicants respectfully submit that the Affidavit of Mr. Okamoto submitted concurrently with the filing of an RCE in the present application successfully overcame the rejection of the claims of the present application based on the Okamoto reference EP '647. As Mr. Okamoto is clearly one skilled in the art, applicants respectfully submit his observations and statements regarding the state of the art should be given great deference.

As applicants have shown each of the claims of the present application are currently in condition for allowance such action is earnestly solicited.

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Respectfully submitted,

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